CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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COUNTRY	USSR (Moscow Oblast)	REPORT	
SUBJECT	The Podolsk Machine-Building Factory i/n Ordzhonikidze	DATE DISTR.	22 October 1954
		NO. OF PAGES	20
DATE OF INFO.		REQUIREMENT NO.	RD
PLACE ACQUIRED		REFERENCES	

25X1

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640373

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1. The Podolsk Machine-Building Factory i/n Ordzhonikidze (Podolskiy Mashinostroitelnyy Zavod imeni Ordzhonikidze) is located in Podolsk, about 45 kilometers south of Moscow. The factory is connected to the Moscow-Kursk railroad by a broad-gauge branch line. It is under the Ministry of Transport and Heavy Machine Building and is directly subordinate to the Chief Directorate of Boiler and Turbine Industry of the ministry. The address of this chief directorate is 12 Krivokolennyy Pereulok, Moscow.

HISTORY

2. The factory, which was originally intended to manufacture cables for war purposes, was started at the end of 1916. With the outbreak of the Revolution in 1917, all building stopped. Construction was started again in 1922, and in 1924, the buildings were completed and equipment installed. The factory, which was allotted the name Paroremont (Locomotive Repair), repaired locomotives and manufactured spare parts for locomotives. In 1927, a small number of locomotives were also produced.

3. During the First Five-Year Plan, the factory was enlarged, and additional equipment was installed. Production was switched to equipment for oil cracking plants; continuous-action tubular oil refining plants (trubchatka); boring machines for oil wells; mine equipment, which consisted chiefly of accumulator-driven electric locomotives for mines; and industrial electric locomotives. This type of production continued until the outbreak of war in 1941.

4. In 1930, the factory was renamed Podolsk KES (Kreking-Elektrovoznogo Stroitelstva-Cracking Plant and Electric Locomotive Construction) and came under the VOMT (Vsesoyuznoye Obyedineniye Tyazhelogo Mashinostroyeniya-All-Union Heavy Machine Building Union). At the beginning of the Second Five-Year Plan, the factory was named after Ordzhonikidze.

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5. In the fall of 1941, after the outbreak of the war, a part of the factory was evacuated, and the vacated buildings were occupied by a part of the Krasnyy Kotelshchik Boiler Factory, which had been evacuated from Taganrog. In 1942, production was almost exclusively connected with the war; but, in 1943, the manufacture of boilers (kotelnyy aggregat) and boiler equipment for electric power stations and industrial enterprises was started.

6. In 1943, the factory received numerous urgent orders for boilers because of the increase in the number of power stations under construction in the east and the restoration of electric power stations in areas liberated from the Germans. Boiler drums (kotelnyy baraban) were not available at this time, as the factories which produced them were engaged in the manufacture of war material; therefore, the Podolsk Boiler Factory, together with other boiler works, started producing drumless uniflow boilers of lighter weight. In 1943-1945, many Ramzin uniflow boilers of various types were manufactured without the employment of steel alloys. These boilers were not completely satisfactory; soon after being brought into use, they developed cracks in the tubes in the lower radiation part (nizhnyaya radiatsionnaya chast) of the furnace, in addition to other defects. Technical details of one of these boilers are as follows:

Type of boiler	SPPN 200/35
Steam output	200 tons per hour
Working pressure	35 atmospheres
Steam temperature	425°C
Temperature of feed water	150°C
Furnace volume	625 cubic meters
Heating surface	1,113 square meters
Diameter of tubes	51/45 mm
Height of boiler	18,200 mm
Width of boiler	8,540 mm
Length of boiler	14,300 mm
Number of burners	48
Fuel	Mazut

7. In 1945, several uniflow boilers of an improved type were manufactured. A few technical details of this type of boiler are given below:

Mark of boiler	53 SPS-200/32
Steam output	200 tons per hour
Working pressure	32 kg per square centimeter
Steam temperature	425°C
Temperature of feed water	150°C
Furnace volume	1,227 cubic meters
Diameter of tubes	51/44 mm
Fuel	Coal dust

8. In 1945, the government confirmed the postwar plan for the boiler and turbine industry, which allotted the manufacture of high-power boilers to the Podolsk Machine Building Factory i/n Ordzhonikidze and the Krasnyy Kotelshchik Factory at Taganrog. The Nevskiy Machine Building Factory i/n Lenin and the Leningrad Metal Factory i/n Stalin, both of which are located in Leningrad and which, before the war, had produced high power boilers, were switched over to the manufacture of steam turbines. The production of low-power boilers was allotted to new boiler works at Biysk and Barnaul. The Podolsk factory was also to produce equipment for oil cracking plants.

9. During 1945-1947, the factory, in addition to producing high-power boilers, also produced a large number of heating and industrial low-power boilers of Shukhov and Shukhov-Saraf systems, Ramzin system heating boilers, and Dobrin system vertical boilers, in addition to a large quantity of spare parts for boilers. In 1948, there was a drop in the production of low-power boilers.

10. Production of oil equipment started in January 1946, when the factory received from the oil industry the first plans and specifications for the production of large quantities of oil equipment, consisting of 80 different varieties of equipment of total weight of about 4,000 tons, for cracking plants. The equipment included machinery and apparatus not produced by the factory before the war, such as vacuum columns (vakuumnaya kolonna) and gasoline pumps, etc. A new pump shop was introduced in 1946.

11. During the first years of the postwar Five-Year Plan (1946-1947), some of the cracking plant equipment, such as vacuum columns and pipe lines, was made of ordinary carbon steel and, owing to corrosion, was short-lived. The factory's designers, Engineers Braude (fnu), Koptev (fnu), Gerasimenko (fnu), and the chief metallurgist Surovtsova (fnu), together with representatives of TsNIITMASh (Central Scientific Research Institute of Heavy Machine Building) evolved means by which oil equipment subject to corrosion was made from stainless and bimetallic steel, and they were also successful in working out methods of welding stainless and bimetallic steel on automatic welding machines. All these designers received Stalin prizes for designing corrosion-proof oil equipment.

12. In 1947, automatic welding machines were used in the factory on external longitudinal seams and internal seams of shells (obechayka), for welding seams of boiler drums, etc. For this work, welding tractors UT-1200 were used and welding was done with flux. For other articles such as rings, flanges, and connecting pipes (patrubok), other welding machines were used. The employment of automatic welding equipment increased considerably the output of oil equipment and boilers. Eight conveyer belts were introduced for various articles, including coils for steam superheaters (zmeyevik dlya paroperegrevateley), for shells (obechayka), for oil equipment, etc.

TYPES OF POSTWAR PRODUCTION

Power (Energeticheskiye) Steam Boilers with Natural Circulation

13. Types of boilers are as follows: SP-4, SPK-5, PK-3, PK-4, PK-5, PK-6, PK-7, PK-8, PK-9, PK-10. Brief technical details of some of the boilers are given below:

a. SP-4-30/22

Description	
Fuel	Header boiler (kamernyy kotel)
Steam output	Brown coal
Working pressure	30 tons per hour
Steam temperature	22 kg per sq cm
Volume of furnace chamber	375°C
Radiation heating surface	123 cubic meters
Convective heating surface	108 square meters
Heating surface of steam superheater	231 square meters
Diameter of boiler tubes	195 square meters
Diameter of steam superheater and economizer tubes	83/76 mm
Total weight with ladders and platforms	38/32 mm
	59.3 tons

b. SPK-5-30/22

Description	Single drum vertical water tube steam boiler with screened header furnace with three atomizers for mechanical spraying of mazut
Fuel	Mazut
Steam output	30 tons per hour, maximum 35 tons per hour
Working pressure	22 kg per sq cm
Temperature of superheated steam	397°C
Convective heating surface of boiler	242 square meters
Steam superheater	Vertical, with heating surface of 281 sq meters
Water economizer	Coil type, with heating surface of 324 sq meters
Air preheater	Three-way tubular type, with heating surface of 770 sq meters
Boiler drum	Seamless forged, with internal diameter of 1,000 mm and length of cylinder 6,960 mm

c. PK-4-150/35

Steam output	150 tons per hour
Working pressure	35 atmospheres
Temperature of steam	425°C

d. PK-5-200/35

Steam output	200 tons per hour
Working pressure	35 atmospheres
Temperature of steam	425°C

e. PK-7-40/38

This boiler is designed to burn brown coal and ordinary coal. There are small differences in the design of this boiler affecting the heating surface of the steam superheater and the air preheater. These differences are dependent on the nature of the fuel used.

Steam output	40 tons per hour
Working pressure	38 kg per square cm
Steam temperature	420°C
Feed water temperature	100°C
Temperature of flue gases	180°C when burning brown coal 170°C when burning ordinary coal
Efficiency with brown coal	88 percent
Efficiency with ordinary coal	84 percent
Volume of furnace chamber	192 cubic meters
Radiation heating surface	181 sq meters
Convective heating surface	40 sq meters
Heating surface of superheater	189 sq meters (brown coal) and 288 sq m (ordinary coal)
Heating surface of water economizer	403 square meters
Heating surface of air preheater	2,130 sq m (brown coal) and 1,020 sq meters (ordinary coal)
Diameter of drum	1212/1300 mm
Length of drum	7,280 mm

Diameter of boiler tubes	83/76 (brown coal) and 60/52 m (ordinary coal)
Diameter of superheater and economizer tubes	38/31 mm
Total weight of boiler burning brown coal including ladders and platforms	159.7 tons
Tctal weight of boiler burning brown coal without ladders and platforms	144.8 tons
Total weight of boiler burning ordinary coal including ladders and platforms	139.1 tons

f. PK-8-150/32

This boiler is constructed with a shaft mill furnace (shakhtno-melnichnaya topka) or with a coal dust furnace.

Steam output	150 tons per hour
Working pressure	32 kg per square cm
Temperature of superheated steam	420°C

g. PK-9-200/35

This is a header boiler which burns brown coal and hard coal (toshchiy ugol).

Steam output	200 tons per hour
Working pressure	35 kg per square cm
Steam temperature	425°C
Feed water temperature	130°C
Efficiency with brown coal	89 percent
Efficiency with hard coal	87 percent
Volume of furnace chamber	With brown coal, 1,060 cubic meters With hard coal, 1,056 cubic meters
Radiation heating surface	With brown coal, 617 sq meters With hard coal, 576 sq meters
Convective heating surface	330 sq meters
Heating surface of superheater	1,054 sq meters
Heating surface of water economizer	8,430 sq meters
Diameter of boiler tubes	83 mm
Diameter of superheater and economizer tubes	38 mm

This boiler is almost identical with boiler TP-200-1, made by the Taganrog Boiler Factory.

h. PK-10-230/100

Fuel	Hard coal, brown coal, milled peat (frezernyy torf)
Steam output	230 tons per hour
Working pressure	100 kg per sq cm
Steam temperature	510°C
Feed water temperature	220°C
Hot air temperature with hard coal	342°C
Hot air temperature with brown coal	394°C
Hot air temperature with peat coal	413°C
Efficiency with hard coal	86.7 percent
Efficiency with brown coal	88.5 percent
Efficiency with peat coal	84.7 percent
Volume of furnace chamber	1,210 cubic meters

Radiation heating surface with hard coal	136 square meters
Radiation heating surface with brown coal	134 square meters
Radiation heating surface with peat	133 square meters
Convective heating surface	146 square meters
Heating surface of superheater with hard coal	2,600 square meters
Heating surface of superheater with brown coal	1,650 square meters
Heating surface of superheater with peat	1,490 square meters
Heating surface of water economizer	2,662 square meters
Heating surface air preheater	10,830 square meters
Diameter of drum	1,400/1,600 mm
Length of drum	10,000 mm
Diameter of boiler tubes	76/64 mm
Diameter of superheater and economizer tubes	42/32 mm
Total weight with ladders and platforms	1,145 tons

The boiler is almost identical with boiler TP-230, made at the Taganrog Boiler Factory.

Uniflow Boiler of Prof. L.K. Ramzin's Design with Single Forced Circulation

14. After the war, the following types of boiler were produced: 24 SP, 51 SP and 67 SP. These boilers include:

a. 24 SP-200/140

b. 51 SP-230/100

Fuel	Coal dust
Output	230 tons per hour
Pressure	100 kg per square cm
Steam temperature	510°C
Temperature of feed water	215°C
Furnace volume	1,225 cubic meters
Evaporative surface of radiation section of boiler	2,280 square meters
Heating surface of transition zone (perekhodnaya zona)	1,400 square meters
Heating surface of superheaters	429 square meters
Heating surface of water economizer	1,320 square meters
Heating surface of air preheater	8,700 square meters
Diameter of tubes of radiation section	40/32, 51/40 meters

c. 67 SP-230/100

The first of these boilers was built in January 1952.

Fuel	Moscow Basin coal dust (Podmoskovnyy ugol)
Output	230 tons
Pressure	100 atmospheres
Temperature of superheated steam	510°C
Temperature of feed water	215°C

This boiler is fitted with four shaft mills (shakhtnaya mɛlnitsa), type ShM 1660/2004, and scraper type feeders. The suction and blow plant (tyagodutevaya ustanovka) consists of two flue gas pumps

(dymosos), type D-300/400, and two blow ventilators, type VD-10-14-N 40. The water economizer is the two-stage type.

Heating and Industrial Heating Boilers

15. Among these are vertical boilers, types VVD-80 and VVD-140, designed by N.G. Dobrin, which came into production in 1948. A few details are given below:

a. VVD-80

Description	Two-drum vertical steam boiler
Output	2 tons per hour
Working pressure	13 kg per sq cm
Heating surface	80 sq meters
Length of boiler	3.16 meters
Width	4.25 meters
Height	4.1 meters
Weight	8.2 tons
Grate	Hand-operated

b. VVD-140

Description	Two-drum vertical steam boiler
Output	4 tons per hour
Working pressure	13 kg per sq cm
Heating surface	140 square meters
Length of boiler	5.1 meters
Width of boiler	3.88 meters
Height of boiler	5.00 meters
Weight of boiler	12.2 tons
Grate	Hand-operated

16. Also in this group is the tent type (shatrovyy tip) water tube steam boiler, type ShG-3, which was produced in 1948, 1949, and 1950.

Output	1 ton per hour
Working pressure	8 atmospheres
Heating surface	38 sq meters
Dimensions of drum	1,029 x 1,280 x 13 mm
Dimensions of chambers (kamera)	450 x 2,730 x 13 mm
Diameter of boiling tubes	38/32 mm
Working water volume	2 cubic meters
Steam volume	1.05 cubic meters
Total weight	3,260 kg

17. The factory produced water tube header boilers, types A-3, A-5, and A-7.

a. A-3

The boiler is made up of three sections, each with 24 tubes of 76/70 mm. The length of the drum is 2.9 meters. The diameter of the drum is 874 mm.

Output	4 tons per hour
Working pressure	13 atmospheres
Heating surface	105 square meters
Heating surface of superheater	18.8 square meters
Temperature of superheated steam	250o-300°C
Weight of superheater	1.06 tons
Weight of boiler	9.17 tons

b. A-5

The boiler is made up of five sections each with 24 tubes of 76/60 mm. The length of the drum is 3.9 meters. The diameter of the drum is 874 mm.

Output	6.5 tons per hour
Working pressure	13 atmospheres
Heating surface	175 square meters
Heating surface of superheater	27.6 square meters
Temperature of superheated steam	250°-300°C
Weight of superheater	1.73 tons
Weight of boiler	13.53 tons

c. A-7

The boiler is made up of seven sections, each with 24 tubes of 76/70 mm. The length of the drum is 4.8 meters. The diameter of the drum is 8.74 mm.

Output	10 tons per hour
Working pressure	13 atmospheres
Heating surface	245 sq meters
Heating surface of superheated steam	38.3 sq meters
Temperature of superheated steam	250°-300°C
Weight of superheater	2.27 tons
Weight of boiler	17.65 tons

These boilers have hand-operated sloping grates. The boilers were produced in 1945, 1946, and part of 1947. They were produced at the Biysk Boiler Factory until 1950, when they were replaced by DKV boilers, which are of better design.

Utilizer-Boiler (Kotel-Utilizator)

18. The factory manufactures three types of this boiler. They are produced in the tube shop. The boiler utilizes the gases of Martin furnaces of various capacities.

19. The following are technical details of the MPTs type utilizer-boiler with a multiple forced circulation, which is installed with the small 35-ton Martin furnace:

Length of boiler drum	1,900 mm
Diameter of drum	900 mm
Heating surface of steam superheater	17 sq meters
Heating surface of boiler	132 sq meters
Heating surface of economizer	25 sq meters
Diameter of tubes of superheater	32 x 3 mm
Diameter of tubes of boiler	25 x 2.6 mm
Diameter of tubes of economizer	25 x 2.6 mm
Boiler output	1,200-2,600 kg per hour
Flue gas pump (dymosos)	50,000 cubic meters per hour
Pressure	250 mm of water column
Temperature of gases	200°C

20. In addition, the boiler, which is fitted with an independent chimney, has a circulation pump with electric drive, steam piston pump, and a centrifugal pump with electric drive. The boiler does not affect the working of the Martin furnace but brings about an increase in its output of four-five percent. The fuel gas pump speeds up the cooling of the furnace when it is shut down. Plans for new Martin furnaces make allowances for the installation of utilizer-boilers.

Ventilators and Flue Gas Pumps (Draught and Blowing Equipment)

21. The factory produces over twenty different types of ventilators and flue gas pumps, including the following:

a. Bracket type single-sided blow ventilators VD-55/240

Output	55,000 cubic meters per hour
Full pressure	240 mm of water column
Temperature of sucked atmosphere	30°C
Motor power	88 kw
Rpm	730
Weight	2.2 tons

b. Bracket type single-sided blow ventilators VD-105/345

Output	105,000 cubic meters per hour
Pressure	345 mm of water column
Temperature of sucked atmosphere	30°C
Motor power	220 kw
Rpm	960
Weight	2.5 tons

c. Bracket type single-sided blow ventilators VD-105/300

Output	105,000 cubic meters per hour
Pressure	300 mm of water column
Temperature	30°C
Motor power	198 kw
Rpm	960
Weight	2.5 tons

d. Bracket type single-sided blow ventilator VD-125/390

Output	125,000 cubic meters per hour
Pressure	390 mm of water column
Temperature	20°C
Motor power	286 kw
Rpm	960
Weight	2.6 tons

e. Bracket type single-sided blow ventilator VD-130/460

Output	130,000 cubic meters per hour
Pressure	460 mm
Temperature	20°C
Rpm	960
Weight	2.8 tons

f. Bracket mill type ventilator (konsolnyy melnichnyy ventilyator) VM-28/650

Output	28,000 cubic meters per hour
Pressure	650 mm of water column
Temperature	90°C
Power	125 kw
Rpm	1,450
Weight	2.43 tons

g. Bracket mill type ventilator VM-40/730

Output	40,000 cubic meters per hour
Pressure	730 mm of water column
Temperature	90°C
Power	160 kw
Rpm	1,450
Weight	2.4 tons

h. Bracket mill type ventilator VM-50/1000

Output	50,000 cubic meters per hour
Pressure	1,000 mm of water columns
Temperature	70°C
Power	245 kw
Rpm	1,450
Weight	3 tons

i. Bracket mill type ventilator VM-75/1200

Output	75,000 cubic meters per hour
Pressure	1,200 mm of water column
Temperature	70°C
Power	430 kw
Rpm	1,450
Weight	4.3 tons

j. Sharp blast ventilator (ventilyator ostrogo dutya) VOD-6/300

Output	6,000 cubic meters per hour
Pressure	300 mm
Temperature	200°C
Power	20 kw
Rpm	2,950
Weight	0.77 tons

k. Sharp blast ventilator VOD-9/300

Output	9,000 cubic meters per hour
Pressure	300 mm
Temperature	225°C
Power	28 kw
Rpm	2,950
Weight	0.77 tons

l. Bracket type flue gas pump (konsolnyy dymosos) D-100/220

Output	100,000 cubic meters per hour
Pressure	290 mm (sic)
Temperature	200°C
Power	165 kw
Rpm	960
Weight	2.39 tons

m. Two-sided flue gas pump D-190

Output	200,000 cubic meters per hour
Pressure	250 mm
Temperature	200°C
Power	242 kw
Rpm	730
Weight	9.6 tons

n. Two-sided flue gas pump D-190-1

Output	175,000 cubic meters per hour
Pressure	125 mm
Temperature	200°C
Power	220 kw
Rpm	730
Weight	9.5 tons

o. Two-sided flue gas pump D-190-1A

Output	200,000 cubic meters per hour
Pressure	310 mm
Temperature	200°C
Power	297 kw
Rpm	960
Weight	9.5 tons

p. Two-sided flue gas pump D-190-2

Output	220,000 cubic meters per hour
Pressure	185 mm
Temperature	200°C
Power	220 kw
Rpm	730
Weight	9.6 tons

q. Two-sided flue gas pump D-190-2-A

Output	240,000 cubic meters per hour
Pressure	375 mm
Temperature	200°C
Power	418 kw
Rpm	960
Weight	9.6 tons

r. Two-sided flue gas pump D-190-A

Output	240,000 cubic meters per hour
Pressure	425 mm
Temperature	200°C
Power	500 kw
Rpm	960
Weight	9.6 tons

s. Two-sided flue gas pump D-250/300

Output	250,000 cubic meters per hour
Pressure	300 mm
Temperature	200°C
Rpm	730
Weight	14.5 tons

t. Two-sided flue gas pump D-300/400

Output	300,000 cubic meters per hour
Pressure	430 mm
Temperature	200°C
Power	685 kw
Rpm	730
Weight	15.4 tons

Tubular Air Preheaters (Trubchatyy Vozdukhopodogrevatel)

22. The factory produces complete tubular air preheaters with tubes of 51/48 mm diameter, with heating surfaces ranging from 560 to 3,100 square meters, also sections of tubular air preheaters, and tubes of tubular air preheaters. Technical details of tubular air preheater sections are as follows:

a. Single-stage three-way section (odnostupenchataya trekhkhodovaya sektsiya)

Heating surface	690 square meters
Number of tubes	563
Length of tubes	8,000 mm
Diameter of tubes	51/48 mm
Dimensions of tube plate (trubnaya doska)	2,850 x 1,180 mm
Weight of section	9.25 tons
Number of sections in group	6 and 8

b. Single-stage two-way section

Heating surface	430 square meters
Number of tubes	563
Length of tubes	5,000 mm
Diameter of tubes	51/48 mm
Dimensions of tube plate	2,850 x 1,180 mm
Weight of section	6 tons
Number of sections in group	6

c. Single-stage three-way section

Heating surface	430 square meters
Number of tubes	563
Length of tubes	5,000 mm
Diameter of tubes	51/48 mm
Dimensions of tube plate	2,850 x 1,180 mm
Weight of section	6 tons
Number of sections in group	12 and 16

d. Two-stage section

1st Stage

Heating surface	718 square meters
Number of tubes	769
Length of tubes	6,050 mm
Diameter of tubes	51/48 mm
Dimensions of tube plate	3,350 x 1,258 mm
Weight of section	9.3 tons
Number of sections in group	8

2nd Stage

Heating surface	370 square meters
Number of tubes	769
Length of tubes	3,050 mm
Diameter of tubes	51/48 mm
Dimensions of tube plate	3,350 x 1,258 mm
Weight of section	5 tons
Number of sections in group	8

Steel Coil Economizers

23. The factory produces many different types of economizers. Some technical details are given below.

Diameter of tubes at average pressure	38/21 and 31/32 meters
Diameter of collector tubes at average pressure	273/203 m and 325/225 mm
Weight of 1 sq meter of heating surface	37 kg
Diameter of tubes at high pressure	38/30 mm and 38/28 mm
Diameter of collection tubes at high pressure	273/203
Weight of 1 square meter of heating surface	47 kg
Speed of water at low pressure	0.35 meters per second
Speed of water at high pressure	0.5 meters per second

Drum and Ball Mills (Barabanno-Sharovaya Melnitsa)

24. Four types of drum and ball mills are produced. Technical details of two of these mills are given below:

a. BShM-287/470

Output	16 tons of anthracite per hour
Working length of drum	4,700 mm
Internal diameter of mill	2,870 mm
Diameter of connecting pipes (patrubok)	900 mm
Volume of mill	30.8 cubic meters
Rpm of drum	20.6
Rpm of electric motor	730
Power of electric motor	525 kw
Weight of balls	39 tons

b. BShM-250/390

Output	10 tons per hour
Type of electric motor	AMO-157-3
Power of electric motor	300 kw
Rpm of electric motor	730
Rpm of drum	23
Reducing gear ratio	5.25

Worm Feeders (Shnekovyy Pitatel)

25. The factory produces five types of worm feeders for main burners (osnovnaya gorelka) and muffle burners (mufelnaya gorelka).

a. Worm feeder for main burners with turns of 240 mm diameter

Gear ratio	1:6.15

Output	12 tons per hour
Weight of feeder with welded body	870 kg
Type of motor	PN-85
Motor power	0.9 kw
Revolutions adjustment limits	1,350 - 450

b. Worm feeder for main burners with turns of 151 mm diameter

Gear ratio	1: 4.5
Output	Up to 6 tons per hour
Weight of feeder with welded body	490 kg, with cast body 588 kg
Type of motor	PN-85
Motor power	0.9 kw
Revolutions adjustment limits	1,350-450

c. Worm feeder for main burners with turns of 151 mm diameter

Gear ratio	1: 2.8
Output	Up to 9 tons per hour
Weight of feeder with welded body	490 kg, with cast body 588 kg
Type of motor	PN-85
Motor power	0.9 kw
Revolutions adjustment limits	1,350-450

d. Worm feeder for muffle burners with turns of 151 mm diameter and gear ratio 1:1

Output	0.5 to 1.5 tons per hour
Weight of feeder with welded body	560 kg
Type of motor	PN-85
Motor power	0.9 kw
Revolutions adjustment limits	1,350 - 450

e. Worm feeder for muffle burners with turns of 151 mm diameter and gear ratio 1:11

Output	0.75 to 2.5 tons per hour
Weight of feeder with welded body	560 kg
Type of motor	PN-85
Motor power	0.9 kw
Revolutions adjustment limits	1,350 - 450

Dust Worm Gears (Pylevoy Shnek)

26. Two types of dust worm gears are produced:

a. Dust worm gears with turns of 400 mm diameter

Maximum length of worm gear	50 meters
Revolutions	65
Output	20 tons per hour
Weight of 1 running meter	131 kg
Reducing gear	ShR-20 with gear ratio 1: 11.4
Number of shaft revolutions	750
Motor power with worm gear not exceeding 35 meters	6.8 kw
Motor power with worm gear exceeding 35 meters	10.3 kw
Weight of reducing gear	390 kg

b. Dust worm gears with turns of 500 mm diameter

Maximum length of worm gear	35 meters
Revolutions	57
Output	45 tons per hour
Weight of 1 running meter	243 kg
Reducing gear	ShR-45 with gear ratio 1:13.2
Number of shaft revolutions	750
Motor power	14.7 kw
Weight of reducing gear	644 kg

Coal Dust Slot Burners (Pyleugolnaya Shchelevaya Gorelka)

27. The factory produces six types of coal dust slot burners as follows:

a. Single (ordinarnaya) slot burner UShch-3A

Output	10 tons per hour
Weight	1.86 tons

b. Single slot burner UShch-3B

Output	10 tons per hour
Weight	1.86 tons

c. Single slot burner UShch-4

Output	7 tons per hour
Weight	1.52 tons

d. Double (sdvoyennaya) slot burner UShch-1

Output	10 tons per hour
Weight	2.74 tons

e. Double slot burner UShch-2

Output	14 tons per hour
Weight	2.73 tons

f. Double slot burner UShch-5

Output	11 tons
Weight	2.6 tons

Muffle Burners (Mufelnaya Gorelka)

28. The factory produces five types of muffle burners with details as follows:

a. Furnace chamber volume	0.34 cubic meters
Grate surface	0.44 square meters
Output	600 kg per hour
Weight	.077 tons
b. Furnace chamber volume	0.24 cubic meters
Grate surface	0.36 square meters
Output	500 kg per hour
Weight	1.22 tons

c.	Furnace chamber volume	1.1 cubic meters
	Grate surface	1.15 square meters
	Output	1,600 kg per hour
	Weight	1.18 tons
d.	Furnace chamber volume	0.65 cubic meters
	Grate surface	0.85 square meters
	Output	1,200 kg per hour
	Weight	0.93 tons
e.	Furnace chamber volume	1.55 cubic meters
	Grate surface	1.2 square meters
	Weight	1.65 tons

Coal Dust Turbulent Burners (Pyleugolnaya Turbulentnaya Gorelka)

29. Six types of turbulent burners are produced, including the following:

a. UT-1

Output	2 to 5 tons per hour
Weight	1.2 tons
Fuel	Anthracite

b. UT-4

Output	2.5 to 4 tons per hour
Weight	1.22 tons
Fuel	Anthracite

c. UT-5

Output	1.8 to 3 tons per hour
Weight	0.92 tons
Fuel	Anthracite

d. UT-6

Output	4.2 to 9.5 tons per hour
Weight	1.35 tons
Fuel	Moscow Basin coal

e. UT-7

Output	3.5 to 7.5 tons per hour
Weight	1.08 tons
Fuel	Anthracite

Pipes

30. The factory produces steel pipe lines of various diameters for electric power stations.

Oil Equipment for Cracking Plants

31. The factory produces over 100 different pieces of oil equipment for cracking plants. These include:

a. Vacuum columns (vakuumnaya kolonna) weighing about 54 tons each. These are covered inside with thin steel alloy sheeting (11-13 percent chromium).

b. Fractionating columns for reforming plants and cracking plants

c. Oxidizing columns with three meters diameter

d. Condensers for columns

e. Gas separators for light cracking columns

f. Distillate cracking plant evaporators

g. Fraction coolers (kholodilnik fraktsii)

h. Steam distillate heat exchangers (parodestilatnyy teploobmennik)

i. Evaporators

j. Absorbers

k. Reboilers

l. Regenerators

m. Mud separators

n. Sedimentation tanks (otstoinik)

o. Parts for tubular furnaces

p. Alko (sic) plates (tarelka alko)

q. Cap plates (kolpachkovaya tarelka)

r. Cascade plates (kaskadnaya tarelka)

s. Gasoline transferring pumps

t. Oil pipe lines

u. Deaerator tanks

v. Cylinders (ballon)

Agricultural Machinery

32. This includes four-share tractor ploughs, tanks for water and fuel, and spare parts for machinery.

OUTPUT

33. Because of the large number of articles produced it is not possible to give figures in respect to equipment manufactured. Some idea of the output in 1955 can be obtained from the following:

a. About 60,000 tons of steel of various kinds were used.

b. 500-540 pieces of oil equipment, exclusive of pumps, small articles, and spare parts, were produced.

c. 12-14 large powerful boilers of drum and uniflow types with steam output of 200 or more tons per hour and several times more medium power boilers were produced.

d. Heating and industrial boilers running into three figures were produced.

e. 900 to 1,000 ventilators and flue gas pumps were produced.

f. About 30,000 nickel-plated bedsteads were produced by the Consumer Goods Shop.

PERSONNEL

34. The director is Kitov (fnu). He was director of the factory in 1949-1950, having previously been director of the Moscow Komega Factory. In 1950, he was appointed head of the Central Department of the Boiler and Turbine Industry of the Ministry of Transport and Heavy Machine Building of the USSR. After two and one half years in this post he returned to the factory as director, replacing Razdobarkin (fnu). From 1943 until the middle of 1949, the director was Bentsion Gdaliyevich Khabenskiy. The following is a list of important personnel:

Deputy directors:	Tsukerman (fnu) and Shpentser (fnu)
Chief engineer:	Chernik (fnu)
Chief technologist:	Khrustachev (fnu)
Chief metallurgist:	Surovtsova (fnu), who is a Stalin prize winner
Acting chief designer:	Chechik (fnu)
Production chief:	Shikanyan (fnu)

35. The total number of employees is about 8,000. In some shops, there are three shifts and in others, two.

SHOPS

36. The following is a list of shops at the factory:

Preparatory Shop (Zagotovitelnyy Tsekh)
Machine Ship (Mekhanicheskiy Tsekh)
2nd Machine Shop (Vtoroy Mekhanicheskiy Tsekh)
Foundry (Liteynyy Tsekh)
Forge (Kuznechnyy Tsekh)
Press Shop (Pressovyy Tsekh)
Metal Construction Shop (Tsekh Metallokonstruktsii)
Boiler Machine Shop (Kotelno-Mekhanicheskiy Tsekh)
Boiler Assembly Shop (Kotelno—Sborochnyy Tsekh)
Draught and Blowing Machine Shop (Tsekh Tyago-Dutevykh Mashin)
Heavy Oil Equipment Shop (Tsekh Krupnoy Neftyanoy Apparatury)
Light Oil Equipment Shop (Tsekh Melkoy Neftyanoy Apparatury)
Pump Shop (Tsekh Nasosov)
Pipe Shop (Trubnyy Tsekh)
Machine Assembly Shop (Mekhano-Sborochnyy Tsekh)
Metal Article Shop (Metiznyy Tsekh)
Tool Shop (Instrumentalnyy Tsekh)
Assembly Shop (Montazhnyy Tsekh)
Electric Shop (Elektro-Tsekh)
Machine Repair Shop (Remontno-Mekhanicheskiy Tsekh)
Crane Shop (Kranovyy Tsekh)
Building and Repair Shop (Remontno-Stroitelnyy Tsekh)
Steam Power Shop (Paro-Silovoy Tsekh)
Consumer Goods Shop (Tsekh Shirpotreba)
Transport Shop (Transportnyy Tsekh)

SOURCES OF MATERIAL

37. The factory obtains steel tubes from the following enterprises:

a. The Dnepropetrovsk Metallurgical Factory i/n Lenin (particularly tubes for uniflow boilers and including stainless steel tubes)

b. The Pervouralsk Novotrubnyy Factory i/n Stalin, No. 703

c. The Nikopol Yuzhnotrubnyy Factory

d. The Dnepropetrovsk Factory i/n Karl Libknekht

38. It obtains rolled, section, and sheet steel and wire from the following:

a. The Hammer and Sickle Factory in Moscow

b. The Elektrostal Factory in Moscow Oblast

39. The factory is supplied with stainless strip and sheet steel by the Elektrostal Factory in Moscow Oblast.

40. The boiler and oil equipment fittings come mostly from the Venyukovskiy Fittings Factory in Moscow Oblast.

CONSUMERS

41. Articles manufactured at the factory are marked ZIO (Zavod imeni Ordzhonikidze). They are sent to all areas of the USSR and also to other Communist countries, including China, Bulgaria, and Rumania. Oil equipment for cracking plants is sent to Baku, Saratov, Ishimbay, Groznyy, etc. Dobrin boilers and others are sent to all coal basins of the USSR and also abroad.

MISCELLANEOUS

42. The factory publishes a newspaper (mnogotirazhka) called Znamya Stakhanovtsa.

43. The equipment of the factory, of which about 70 percent has been replaced since the war, is in good condition. Most of the industrial buildings now require complete overhaul or major repairs.

44. The situation regarding housing for factory personnel is gradually improving, and new buildings are being erected annually. In 1953, two large six-storied blocks were built near the Pakhra River, facing the Podolsk Park of Culture and Rest.

1. [redacted] Comment: The remaining portion of this ratio is illegible. 25X1

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